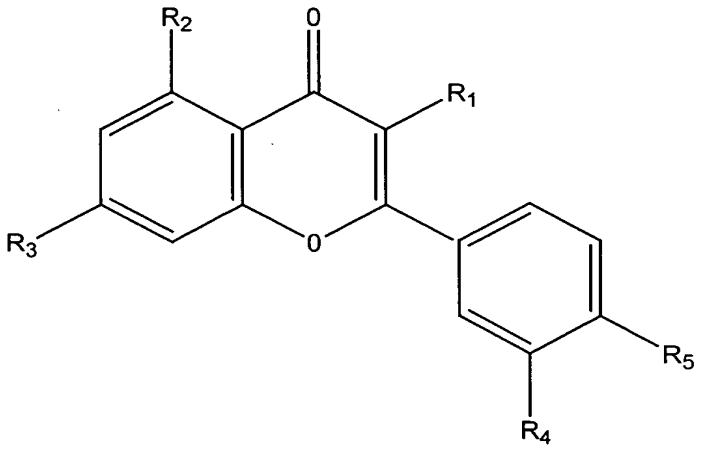
WHAT IS CLAIMED IS:

1. A method of ameliorating the symptoms associated with osteoporosis, said method comprising:

administering to said subject a therapeutic agent comprising quercetin or at least one derivative thereof represented by the following general formula (I)



wherein,

R_1 is gentiotriose, glucopyranose, O-arabinofuranose, O-diglucopyranose, O-galactopyranose, O-galactoside-gallate, O-gentiobiose, O-glucopyranose, O-glucuronide, O-neohesperidose, O-rhamnopyranose, O-sophorose, O-xylopyranose, OCH_3, OH, rhamnogentiobiose, rhamnoglucose, or sulfate;

R_2 is OH or O-glucopyranose;

R_3 is OCH_3, OH, O-glucopyranose, O-glucuronopyranose or glucopyranose;

R_4 is OCH_3, OH; and

R_5 is OCH_3, OH, O-glucopyranose or O-glucose, and

wherein said therapeutic agent lacks calcium.

2. The method of Claim 1, wherein said quercetin or at least one derivative thereof is selected from the group consisting of quercetin, avicularoside, guiajaverin, hyperoside, isohyperoside, isoquercitrin, multinoside A, multinoside A acetate,

quercitrin, quercetin-3-O-(2"-O-β-D-glucopyranosyl)-α-L-rhamnopyranoside, quercetin-3-O-(6"-O-galloyl)-glucopyranoside, quercetin-3-O-(6'''-O-p-coumaroyl-β-D-glucopyranosyl-(1-2)-α-L-rhamnopyranoside), quercetin-3-O-D-glucopyranosyl-(1-6)-β-D-glucopyranosyl-(1-4)-α-L-rhamnopyranoside, quercetin-3-O-[2"-O-6'''-O-p-(7''''-O-β-D-glucopyranosyl)coumaroyl-β-D-glucopyranosyl]-α-L-rhamnopyranoside, quercetin-3-O-[6'''-p-coumaroyl-β-D-glucopyranosyl-β-(1-4)-rhamnopyranoside], quercetin-3-O-[α-L-rhamnopyranosyl (1-2)-α-L-rhamnopyranosyl-(1-6)-β-D-glucopyranoside], quercetin-3-O-[α-rhamnopyranosyl (1-4)α-L-rhamnopyranosyl (1-6)β-D-galactopyranoside], quercetin-3-O-[α-rhamnopyranosyl-(1-2)]-[β-glucopyranosyl-(1-6)]-β-D-galactopyranoside, quercetin-3-O-[α-rhamnopyranosyl-(1-4)-α-rhamnopyranosyl-(1-6)-β-galactopyranoside], quercetin-3-O-α-L-rhamnopyranosyl-(1-2)-β-D-galactopyranoside, quercetin-3-O-β-D-diglucopyranoside, quercetin-3-O-β-D-galactoside-2"-gallate, quercetin-3-O-β-D-glucopyranoside-(1-6)-β-D-galactopyranoside, quercetin-3-O-β-D-glucopyranosyl-(1-3)-α-L-rhamnopyranosyl-(1-6)-β-D-galactopyranoside, quercetin-3-O-β-D-glucuronide, quercetin-3-O-β-D-xylopyranoside, quercetin-3-O-diglucospyranoside, quercetin-3-O-gentiobioside, quercetin-3-O-glucopyranosylgalactopyranoside, quercetin-3-O-neohesperidoside, quercetin-3-gentiotrioside, quercetin-3-methyl ether, quercetin-3-rhamnogentiobioside, quercetin-3-rhamnoglucoside and quercetin-3-sulfate.

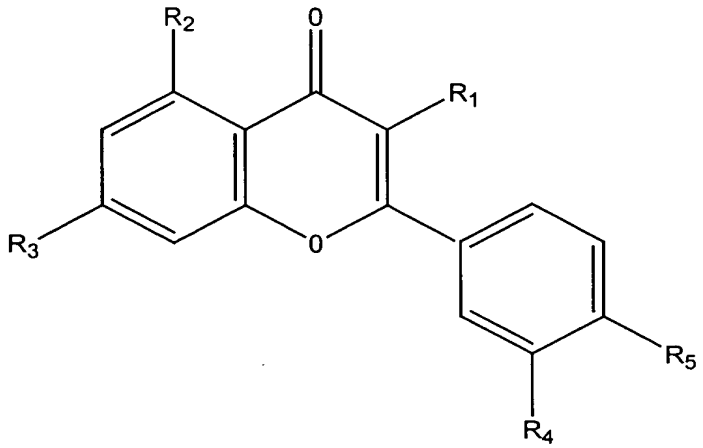
3. The method of Claim 1, wherein said at least one quercetin derivative is selected from the group consisting of isorhamnetin, quercimeritrin, rhamnetin, quercetin-5-O-β-D-glucopyranoside, quercetin-7-O-β-D-glucuronopyranoside and spireaoside.

4. The method of Claim 1, wherein said at least one quercetin derivative is selected from the group consisting of rhamnazin, quercetin-3',4'-di-methyl ether, quercetin-3,3'-dimethyl ether, quercetin-3,7-dimethyl ether, quercetin-3-O-[2"-O-(6'''-O-p-coumaroyl)-β-D-glucopyranosyl]-α-L-rhamnopyranosyl-7-O-β-D-glucopyranoside, quercetin-3-O-[2"-O-6'''-O-p-(7''''-O-β-D-glucopyranosyl)coumaroyl-β-D-glucopranosyl]-α-L-rhamnopyranoside-7-O-β-D-glucopyranoside, quercetin-3-O-rutinoside-7-O-β-D-glucopyranoside, quercetin-3-O-α-L-arabinopyranosyl-7-O-β-D-glucopyranoside, quercetin-7-O-β-D-glucopyranoside-3-O-sophoroside, quercetin-3-O-galactopyranosyl-7-O-diglucopyranoside, quercetin-3-O-glucopyranosyl-7-diglucopyranoside, quercetin-3,7-diglucopyranoside, quercetin-3-gentiobiosyl-7-glucopyranoside and quercetin-3,4'-di-O-β-D-glucopyranoside.

5. The method of Claim 1, wherein said at least one quercetin derivative is selected from the group consisting of quercetin-3,4',7-trimethyl ether and quercetin-3,3',4',7-tetramethyl ether.

6. A method of ameliorating the symptoms associated with osteoporosis, said method comprising:

administering to said subject a therapeutic agent consisting essentially of quercetin or at least one derivative thereof represented by the following general formula (I)



wherein,

R_1 is gentiotriose, glucopyranose, O-arabinofuranose, O-diglucopyranose, O-galactopyranose, O-galactoside-gallate, O-gentiobiose, O-glucopyranose, O-glucuronide, O-neohesperidose, O-rhamnopyranose, O-sophorose, O-xylopyranose, OCH_3, OH, rhamnogentiobiose, rhamnoglucose, or sulfate;

R_2 is OH or O-glucopyranose;

R_3 is OCH_3, OH, O-glucopyranose, O-glucuronopyranose or glucopyranose;

R_4 is OCH_3, OH; and

R_5 is OCH_3, OH, O-glucopyranose or O-glucose.

7. The method of Claim 6, wherein said quercetin or at least one derivative thereof is selected from the group consisting of quercetin, avicularoside, guiajaverin, hyperoside, isohyperoside, isoquercitrin, multinoside A, multinoside A acetate, quercitrin, quercetin-3-O-(2"-O-β-D-glucopyranosyl)-α-L-rhamnopyranoside, quercetin-3-O-(6"-O-galloyl)-glucopyranoside, quercetin-3-O-(6'"-O-p-coumaroyl-β-D-glucopyranosyl-(1-2)-α-L-rhamnopyranoside), quercetin-3-O-D-glucopyranosyl-(1-6)-β-D-glucopyranosyl-(1-4)-α-L-rhamnopyranoside, quercetin-3-O-[2"-O-6'"-O-p-(7""-O-β-D-glucopyranosyl)coumaroyl-β-D-glucopyranosyl]-α-L-rhamnopyranoside, quercetin-3-O-[6'"-p-coumaroyl-β-D-

glucopyranosyl-β-(1-4)-rhamnopyranoside], quercetin-3-O-[α-L-rhamnopyranosyl (1-2)-α-L-rhamnopyranosyl-(1-6)-β-D-glucopyranoside], quercetin-3-O-[α-rhamnopyranosyl (1-4)α-L-rhamnopyranosyl (1-6)β-D-galactopyranoside], quercetin-3-O-[α-rhamnopyranosyl-(1-2)]-[β-glucopyranosyl-(1-6)]-β-D-galactopyranoside, quercetin-3-O-[α-rhamnopyranosyl-(1-4)-α-rhamnopyranosyl-(1-6)-β-galactopyranoside], quercetin-3-O-α-L-rhamnopyranosyl-(1-2)-β-D-galactopyranoside, quercetin-3-O-β-D-diglucopyranoside, quercetin-3-O-β-D-galactoside-2"-gallate, quercetin-3-O-β-D-glucopyranoside-(1-6)-β-D-galactopyranoside, quercetin-3-O-β-D-glucopyranosyl-(1-3)-α-L-rhamnopyranosyl-(1-6)-β-D-galactopyranoside, quercetin-3-O-β-D-glucuronide, quercetin-3-O-β-D-xylopyranoside, quercetin-3-O-diglucospyranoside, quercetin-3-O-gentiobioside, quercetin-3-O-glucopyranosylgalactopyranoside, quercetin-3-O-neohesperidoside, quercetin-3-gentiotrioside, quercetin-3-methyl ether, quercetin-3-rhamnogentiobioside, quercetin-3-rhamnoglucoside and quercetin-3-sulfate.

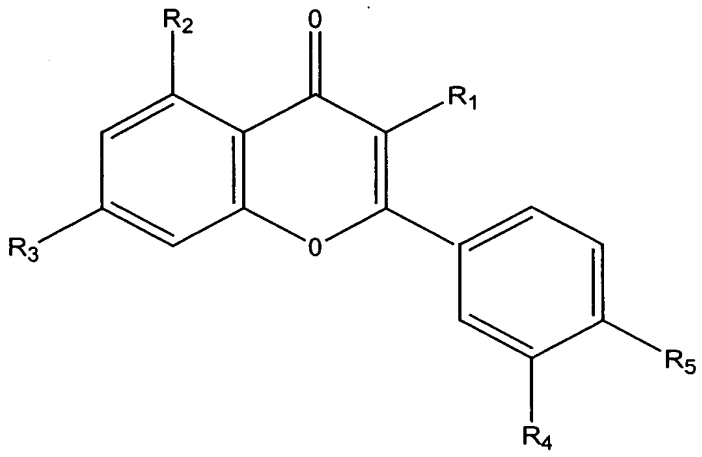
8. The method of Claim 6, wherein said at least one quercetin derivative is selected from the group consisting of isorhamnetin, quercimeritrin, rhamnetin, quercetin-5-O-β-D-glucopyranoside, quercetin-7-O-β-D-glucuronopyranoside and spireaoside.

9. The method of Claim 6, wherein said at least one quercetin derivative is selected from the group consisting of rhamnazin, quercetin-3',4'-di-methyl ether, quercetin-3,3'-dimethyl ether, quercetin-3,7-dimethyl ether, quercetin-3-O-[2"-O-(6'"-O-p-coumaroyl)-β-D-glucopyranosyl]-α-L-rhamnopyranosyl-7-O-β-D-glucopyranoside, quercetin-3-O-[2"-O-6'"-O-p-(7""-O-β-D-glucopyranosyl)coumaroyl-β-D-glucopranosyl]-α-L-rhamnopyranoside-7-O-β-D-glucopyranoside, quercetin-3-O-rutinoside-7-O-β-D-glucopyranoside, quercetin-3-O-α-L-arabinopyranosyl-7-O-β-D-glucopyranoside, quercetin-7-O-β-D-glucopyranoside-3-O-sophoroside, quercetin-3-O-galactopyranosyl-7-O-diglucopyranoside, quercetin-3-O-glucopyranosyl-7-diglucopyranoside, quercetin-3,7-diglucopyranoside, quercetin-3-gentiobiosyl-7-glucopyranoside and quercetin-3,4'-di-O-β-D-glucopyranoside.

10. The method of Claim 6, wherein said at least one quercetin derivative is selected from the group consisting of quercetin-3,4',7-trimethyl ether and quercetin-3,3',4',7-tetramethyl ether.

11. A method of ameliorating the symptoms associated with osteoporosis, said method comprising:

increasing the trabecular bone area of a subject by administering to said subject a therapeutic agent, which comprises quercetin or at least one derivative thereof represented by the following general formula (I)



wherein,

R_1 is gentiotriose, glucopyranose, O-arabinofuranose, O-diglucopyranose, O-galactopyranose, O-galactoside-gallate, O-gentiobiose, O-glucopyranose, O-glucuronide, O-neohesperidose, O-rhamnopyranose, O-sophorose, O-xylopyranose, OCH_3, OH, rhamnogentiobiose, rhamnoglucose, or sulfate;

R_2 is OH or O-glucopyranose;

R_3 is OCH_3, OH, O-glucopyranose, O-glucuronopyranose or glucopyranose;

R_4 is OCH_3, OH; and

R_5 is OCH_3, OH, O-glucopyranose or O-glucose, and

wherein said increase in trabecular bone area is at least about 29 percent.

12. The method of Claim 11, wherein said quercetin or at least one derivative thereof is selected from the group consisting of quercetin, avicularoside, guiajaverin, hyperoside, isohyperoside, isoquercitrin, multinoside A, multinoside A acetate, quercitrin, quercetin-3-O-(2"-O-β-D-glucopyranosyl)-α-L-rhamnopyranoside, quercetin-3-O-(6"-O-galloyl)-glucopyranoside, quercetin-3-O-(6'"-O-p-coumaroyl-β-D-glucopyranosyl-(1-2)-α-L-rhamnopyranoside), quercetin-3-O-D-glucopyranosyl-(1-6)-β-D-glucopyranosyl-(1-4)-α-L-rhamnopyranoside, quercetin-3-O-[2"-O-6'"-O-p-(7""-O-β-D-glucopyranosyl)coumaroyl-β-D-glucopyranosyl]-α-L-rhamnopyranoside, quercetin-3-O-[6'"-p-coumaroyl-β-D-glucopyranosyl-β-(1-4)-rhamnopyranoside], quercetin-3-O-[α-L-rhamnopyranosyl (1-2)-α-L-rhamnopyranosyl-(1-6)-β-D-glucopyranoside], quercetin-3-O-[α-rhamnopyranosyl (1-4)α-L-rhamnopyranosyl (1-6)β-D-galactopyranoside], quercetin-3-O-[α-rhamnopyranosyl-(1-2)]-[β-glucopyranosyl-(1-6)]-β-D-galactopyranoside, quercetin-3-O-[α-rhamnopyranosyl-(1-4)-α-rhamnopyranosyl-(1-6)-β-galactopyranoside], quercetin-3-O-α-L-rhamnopyranosyl-(1-2)-β-

D-galactopyranoside, quercetin-3-O-β-D-diglucopyranoside, quercetin-3-O-β-D-galactoside-2"-gallate, quercetin-3-O-β-D-glucopyranoside-(1-6)-β-D-galactopyranoside, quercetin-3-O-β-D-glucopyranosyl-(1-3)-α-L-rhamnopyranosyl-(1-6)-β-D-galactopyranoside, quercetin-3-O-β-D-glucuronide, quercetin-3-O-β-D-xylopyranoside, quercetin-3-O-diglucospyranoside, quercetin-3-O-gentiobioside, quercetin-3-O-glucopyranosylgalactopyranoside, quercetin-3-O-neohesperidoside, quercetin-3-gentiotrioside, quercetin-3-methyl ether, quercetin-3-rhamnogentiobioside, quercetin-3-rhamnoglucoside and quercetin-3-sulfate.

13. The method of Claim 11, wherein said at least one quercetin derivative is selected from the group consisting of isorhamnetin, quercimeritrin, rhamnetin, quercetin-5-O-β-D-glucopyranoside, quercetin-7-O-β-D-glucuronopyranoside and spireaoside.

14. The method of Claim 11, wherein said at least one quercetin derivative is selected from the group consisting of rhamnazin, quercetin-3',4'-di-methyl ether, quercetin-3,3'-dimethyl ether, quercetin-3,7-dimethyl ether, quercetin-3-O-[2"-O-(6'"-O-p-coumaroyl)-β-D-glucopyranosyl]-α-L-rhamnopyranosyl-7-O-β-D-glucopyranoside, quercetin-3-O-[2"-O-6'"-O-p-(7""-O-β-D-glucopyranosyl)coumaroyl-β-D-glucopranosyl]-α-L-rhamnopyranoside-7-O-β-D-glucopyranoside, quercetin-3-O-rutinoside-7-O-β-D-glucopyranoside, quercetin-3-O-α-L-arabinopyranosyl-7-O-β-D-glucopyranoside, quercetin-7-O-β-D-glucopyranoside-3-O-sophoroside, quercetin-3-O-galactopyranosyl-7-O-diglucopyranoside, quercetin-3-O-glucopyranosyl-7-diglucopyranoside, quercetin-3,7-diglucopyranoside, quercetin-3-gentiobiosyl-7-glucopyranoside and quercetin-3,4'-di-O-β-D-glucopyranoside.

15. The method of Claim 11, wherein said at least one quercetin derivative is selected from the group consisting of quercetin-3,4',7-trimethyl ether and quercetin-3,3',4',7-tetramethyl ether.